

New Nebulæ. By W. F. Denning.

The following nebulae were discovered in *Camelopardus* while comet-seeking with a reflector of 10 inches aperture. With the exception of Nos. 1 and 10, they were first seen with a power of 60, field 50'. The positions may be regarded as correct within about 2' or 3', and they have been determined by comparison with small stars, which were kindly identified for me by Dr. Copeland, the Astronomer Royal for Scotland:—

No.	Date of Discovery.	Position for 1890.			Description.
		R.A.	N.P.D.	h m s	
1	1889, Aug. 26	4 29 59	14 34' 8	14 34' 8	F.S, bM, * 12 Np.
2	1890, Nov. 7	4 40 19	11 52' 1	11 52' 1	F.S.R.
3	1890, Oct. 19	4 46 38	21 50' 2	21 50' 2	F.S.R., bMN, F dou. * Sf.
4	1890, Nov. 16	5 50 7	9 29' 0	9 29' 0	vF, S.
5	1890, Nov. 9	6 11 45	6 58' 1	6 58' 1	F.S.R., mbM.
6	1890, Oct. 17	6 59 26	4 15' 0	4 15' 0	vF, vvS, 12' SSf, NGC 2300.
7	1890, Nov. 7	7 8 52	9 52' 6	9 52' 6	vF, pS, 22' SSf, NGC 2336.
8	1890, Sept. 14	7 23 24	4 30' 0	4 30' 0	F.S.E., 46' Sf, NGC 2300.
9	1890, Sept. 8	8 21 37	3 52' 6	3 52' 6	pF, S, mbM, * Nf.
10	1890, Aug. 23	8 34 30	4 5' 6	4 5' 6	F.S.R., gbM. In same field as preceding and Sff.

The place of No. 1 is probably very accurate, as it was given me by M. Charlois, of the Nice Observatory, who observed the nebula at my request.

Bristol : 1890, November 25.

Notes on Celestial Photographs taken at the Sydney Observatory.
By H. C. Russell, B.A., F.R.S.

Since I sent you copies of some of my photographs of the Milky Way, &c., it has occurred to me that it was desirable that I should, with the same lens, &c., plate-development, and exposure, take a picture of some object well known to the members of the Royal Astronomical Society, so that there should be some measure of the work I have been doing upon southern objects. I therefore selected *Orion*, and upon an evening of average clearness I exposed a plate for four hours, and developed it as I did my other photographs. The glass positive and silver print from this which I have sent herewith will show better than any words what the photograph is like. Suffice it here to say that the

negative was much over-exposed, and shows folds of the nebula extending to the bright star ι . When developed, and before the intensifying solutions were applied, the negative was full of most beautiful detail of the central part of the nebula, but this, as will be seen, was all lost by intensifying the negative—in other words, treating it as my other negatives have been treated. The outer folds of the nebula shown here extend beyond those shown in any other photograph I have seen, but I have only seen some of the best. My photograph also shows some structure in the nebula about the third star in the Sword-handle, and if the effects here recorded are compared with those obtained with three hours' exposure on a good night upon η *Argus*, it will afford a measure of the extreme faintness, photographically, of η *Argus*.

I am also sending glass positive and silver-print reproductions from another negative of the *Nubecula Major*, obtained on October 17 with an exposure of 7 hours 3 minutes. This plate was taken upon the only available night since my previous letter, and brings out in a still more remarkable manner the spiral structure of this wonderful object, as well as two well-defined oval and spiral star clusters, the one about 3° north of the great one, the other south preceding it about the same distance. It is much to be regretted that the plate on which this negative was taken had several slight stains when developed; one occupies the whole of the preceding side of the plate, and can be traced past the preceding end of the great spiral; the others are small, faint, dark marks, extending across the plate and some distance from the centre.

Each increase in the time of exposure brings out new details of this striking object, all helping to indicate more and more clearly its spiral character. As seven hours is nearly the limit of darkness at this time of the year, I have placed the camera 18 miles out of the city, on a hill 615 feet high, and hope under a clearer atmosphere to secure a more perfect picture. I also send a print from a negative of *Nubecula Minor*, taken October 14 to 15, with eight hours' exposure, which brings out clearly the spiral character of this object, and its general similarity in form to the *Nubecula Major*.

Sydney Observatory :
1890, November 3.

Elements and Ephemeris of Zona's Comet.

By J. R. Hind, LL.D., F.R.S.

The following orbit depends upon an observation at Rome on November 16, one by Baron von Engelhardt on the 18th, and the Paris observations on the 21st:—

Perihelion passage, 1890, August 8^h43592 G.M.T.

Longitude of perihelion ...	...	...	113 16 52 ^{''} 1	Appt. Eq. Nov. 20.
„ Ascending node ...	...	...	85 25 2 ^{''} 7	
Inclination ...	...	...	25 38 57 ^{''} 4	
Log perihelion distance ...	...	...	0.3138092	

Motion—retrograde.

The middle observation is thus represented $\Delta\lambda \cos \beta (c - o) = + 0^{\circ}33, \Delta\beta = + 2^{\circ}0.$

Ephemeris for Greenwich Midnight.

1890. Dec. 10	R.A.			Decl.	Log Δ
	h	m	s		
12	3	15	4	+ 33 57.7	0.2072
14	3	5	58	33 35.2	
16	2	57	26	33 11.1	0.2252
18	2	49	27	32 45.9	
20	2	42	0	32 19.9	0.2449
22	2	35	4	31 53.6	
24	2	28	38	31 27.4	0.2658
26	2	22	42	31 1.5	
	2	17	14	+ 30 36.0	0.2872

The intensity of light on December 10 = 0.74, and on December 26 = 0.47, that on November 16 being taken as unity.